FORM PTO 1390 (REV 5-93) US DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. §371

ATTORNEY DOCKET NUMBER
2001-1137A

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)
09/914593
NEW

International Application No.	**International Filing Date**	**Priority Date Claimed**
PCT/JP00/04275	June 29, 2000	June 29, 1999

Title of Invention
OPTICAL DISK DEVICE

Applicant(s) For DO/EO/US
Yuji MATSUDA

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. §371.

2. [] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. §371.

3. [X] This express request to begin national examination procedures (35 U.S.C. §371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. §371(b) and PCT Articles 22 and 39(1).

4. [X] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. [X] A copy of the International Application as filed (35 U.S.C. §371(c)(2))
   a. [] is transmitted herewith (required only if not transmitted by the International Bureau).
   b. [X] has been transmitted by the International Bureau. **ATTACHMENT A**
   c. [] is not required, as the application was filed in the United States Receiving Office (RO/US)

6. [X] A translation of the International Application into English (35 U.S.C. §371(c)(2)). **ATTACHMENT B**

7. [] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. §371(c)(3)).
   a. [] are transmitted herewith (required only if not transmitted by the International Bureau).
   b. [] have been transmitted by the International Bureau.
   c. [] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [] have not been made and will not be made.

8. [] A translation of the amendments to the claims under PCT Article 19.

9. [X] An (unexecuted) oath or declaration of the inventor(s) (35 U.S.C. §371(c)(4)). **ATTACHMENT C**

10. [X] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. §371(c)(5)). **ATTACHMENT D**

Items 11. to 14. below concern other document(s) or information included:

11. [X] An Information Disclosure Statement under 37 CFR 1.97 and 1.98. **ATTACHMENT E**

12. [] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [X] A FIRST preliminary amendment. **ATTACHMENT F**

    [] A SECOND or SUBSEQUENT preliminary amendment.

14. [X] Other items or information: Notification Concerning Submission or Transmittal of Priority Document - **ATTACHMENT G**

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) NEW 09/914593	INTERNATIONAL APPLICATION NO. PCT/JP00/04275	ATTORNEY'S DOCKET NO. 2001-1137A

15. [X] The following fees are submitted	CALCULATIONS	PTO USE ONLY
BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):		
Neither international preliminary examination fee nor international search fee paid to USPTO and International Search Report not prepared by the EPO or JPO $1000.00		
International Search Report has been prepared by the EPO or JPO ..... $ 860.00		
International preliminary examination fee not paid ot USPTO but international search paid to USPTO ..... $ 710.00		
International preliminary examination fee paid to USPTO but claims did not satisfy provisions of PCT Article 33(1)-(4) ..... $ 690.00		
International preliminary examination fee paid ot USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... $ 100.00		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$860.00	
Surcharge of $130.00 for furnishing the oath or declaration later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$	

Claims	Number Filed	Number Extra	Rate		
Total Claims	16 -20 =		X $18.00	$	
Independent Claims	1 - 3 =		X $80.00	$	
Multiple dependent claim(s) (if applicable)			+ $270.00	$	
TOTAL OF ABOVE CALCULATIONS =				$860.00	
[] Small Entity Status is hereby asserted. Above fees are reduced by 1/2.				$	
SUBTOTAL =				$860.00	
Processing fee of $130.00 for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$	
TOTAL NATIONAL FEE =				$860.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40 per property +				$	
TOTAL FEES ENCLOSED =				$860.00	
				Amount to be refunded	$
				Amount to be charged	$

a. [X] A check in the amount of $860.00 to cover the above fees is enclosed. A duplicate copy of this form is enclosed.

b. [] Please charge my Deposit Account No. 23-0975 in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 23-0975

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

19. CORRESPONDENCE ADDRESS

000513

PATENT TRADEMARK OFFICE

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August 30, 2001

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[2001_1137A]

ATTACHMENT A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :

Yuji MATSUDA : **Attn: BOX PCT**

Serial No. NEW : **Docket No. 2001-1137A**

Filed August 30, 2001 :

OPTICAL DISK DEVICE
[Corresponding to PCT/JP00/04275
Filed June 29, 2000]

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents,
Washington, DC 20231

Sir:

Prior to examination of the above-referenced U.S. patent application please amend the application as follows:

IN THE SPECIFICATION

Please amend the specification as follows:

Please replace the paragraph beginning at page 4, line 20, to line 23, with the following rewritten paragraph:

According to the invention (Claim 2), the optical disk device as defined in Claim 1 includes: a spindle driver IC, a traverse driver IC, and an actuator driver IC as the driver IC.

IN THE CLAIMS

Please amend the claims as follows:

3. (Amended) The optical disk device as defined in Claim 1,

wherein the spindle driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the spindle driver IC is exerted so as not to perform a forced acceleration or forced deceleration of the optical disk for an arbitrary period of time.

4. (Amended) The optical disk device as defined in Claim 1,

wherein the spindle driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the spindle driver IC is exerted so that a free run state of the optical disk is included in changes in revolution of the optical disk.

5. (Amended) The optical disk device as defined in Claim 1,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

Please add the following new claims:

6. The optical disk device as defined in Claim 1,

wherein the spindle driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the spindle driver IC is exerted so as not to perform a forced acceleration or forced deceleration of the optical disk for an arbitrary period of time.

7. The optical disk device as defined in Claim 2,

wherein the spindle driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the spindle driver IC is exerted so that a free run state of the optical disk is included in changes in revolution of the optical disk.

8. The optical disk device as defined in Claim 3,

wherein the spindle driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the spindle driver IC is exerted so that a free run state of the optical disk is included in changes in revolution of the optical disk.

9. The optical disk device as defined in Claim 6,

wherein the spindle driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the spindle driver IC is exerted so that a free run state of the optical disk is included in changes in revolution of the optical disk.

10. The optical disk device as defined in Claim 2,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

11. The optical disk device as defined in Claim 3,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

12. The optical disk device as defined in Claim 6,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

13. The optical disk device as defined in Claim 4,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

14. The optical disk device as defined in Claim 7,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

15. The optical disk device as defined in Claim 8,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

16. The optical disk device as defined in Claim 9,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

REMARKS

The above amendments have been made to make minor editorial changes so as to generally improve the form of the specification. Furthermore, the Preliminary Amendment is submitted to delete the multiple dependency of the claims, thereby placing such claims in condition for examination and reducing the required PTO filing fee.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current Preliminary Amendment. The attached page is captioned "**Version With Markings to Show Changes Made**".

Respectfully submitted,

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DESCRIPTION

OPTICAL DISK DEVICE

TECHNICAL FIELD

The present invention relates to an optical disk device and, more particularly, to a device that controls heat generation of a driver IC.

BACKGROUND ART

In the past several years, speeding-up of optical disk devices has proceeded, and 12x-speed CLV (Constant Linear Velocity) drives and maximum-24x-speed CAV (Constant Angular Velocity) drives have come along. With this speeding-up, allowable losses from heat become insufficient in conventional driver ICs such as spindle driver ICs, actuator driver ICs and traverse driver ICs, and this problem is dealt with by adding a heat dissipating plate or the like to a driver IC to control heat generation of the driver IC, arranging an air blowing means at an optical disk driving part to control heat generation as disclosed in Japanese Published Patent Application No. Hei.9-265772, or employing a pattern design with a high heat radiation efficiency in PCB design, and in the case of eccentric disk, by adopting a method of reducing the number of revolutions of the disk or the like.

Further, when there are constraint conditions on the

driver IC, the heat dissipating plate for suppressing heat generation or the like cannot be added, and thus this problem is dealt with by using a driver IC of power package specifications whose allowable loss from heat is large or preventing the disk from being rotated at high speed.

In a case where the allowable loss of the driver IC due to heat is exceeded even though the above-described measures for suppressing heat generation are taken, in order to prevent the resultant breakdown of the driver IC or the like, the driver IC is provided with a thermal shutdown function, whereby the operation of the driver IC is stopped forcibly when the junction temperature as a chip temperature of the driver IC reaches a predetermined temperature.

However, when speeding-up of the optical disk device is to be further progressed in the future, the allowable loss of the conventional driver IC due to heat is insufficient, resulting in breakage of the driver IC. That is, due to the further speeding-up of the optical disk device, in partially eccentric disks or the like, it is required that the acceleration sensitivity of an actuator in a pickup should be increased more than ever, and face wobbling or eccentricity of a disk becomes more serious with the speeding-up, resulting in a severe heat generation of an actuator driver IC. Further, the change in the number of revolutions of the disk also becomes larger, and accordingly heat generation in a spindle driver IC due to

repetition of forced acceleration or forced deceleration of a spindle motor, or heat generation in a traverse driver IC due to high-speed movement of a traverse (thread) becomes severe.

When the driver IC is provided with the thermal shutdown function, the driver IC can be protected from breakage due to heat generation, but the optical disk device becomes uncontrollable while the thermal shutdown function is being operated.

The present invention is made to solve the above-mentioned problems and has for its object to provide an optical disk device which can exert a control for efficiently suppressing heat generation before driving of the optical disk device is impeded by heat generation of a driver IC for driving a recording/reproduction driving system of the optical disk device, and can perform a fast and stable operation within an allowable capacity of the driver IC.

DISCLOSURE OF THE INVENTION

According to the invention (Claim 1), there is provided an optical disk device for recording/reproducing data on/from an optical disk, comprising: a monitor circuit for monitoring a junction temperature of a chip of a driver IC for driving a recording/reproduction driving system, and a comparison circuit for comparing an output of the monitor circuit with an arbitrary set temperature and outputting a temperature flag as

a comparison result, which circuits are included in the driver IC; and a CPU for controlling the operation of the entire optical disk device as well as monitoring the temperature flag outputted from the comparison circuit, the CPU performing a control so as to continue driving of the optical disk device when the junction temperature is lower than the arbitrary set temperature, and performing a control so as to suppress heat generation of the driver IC when the junction temperature is equal to or higher than the arbitrary set temperature.

According to the optical disk device constructed as described above, the monitor circuit in the driver IC for driving the recording/reproduction driving system monitors the junction temperature of the driver IC chip, the comparison circuit compares the junction temperature of the driver IC chip monitored by the monitor circuit with the arbitrarily set temperature to output the temperature flag as the comparison result, and the CPU monitors the temperature flag. Therefore, heat generation of the driver IC can be suppressed with efficiency.

According to the invention (Claim 2), in the optical disk device as defined in Claim 1, the optical disk device as defined in Claim 1 includes: a spindle driver IC, a traverse driver IC, and an actuator driver IC as the driver IC.

According to the optical disk device constructed as described above, the spindle driver IC, the traverse driver IC

and the actuator driver IC are included as the driver IC. Therefore, heat generation of the spindle driver IC, the traverse driver IC and the actuator driver IC can be suppressed with efficiency.

According to the invention (Claim 3), in the optical disk device as defined in Claim 1 or 2, the spindle driver IC internally has the monitor circuit and the comparison circuit, and a control for suppressing heat generation of the spindle driver IC is exerted so as not to perform a forced acceleration or forced deceleration of the optical disk for an arbitrary period of time.

According to the optical disk device constructed as described above, the monitor circuit and the comparison circuit are included in the spindle driver IC, and heat generation of the traverse driver IC is suppressed by controlling not to perform a forced acceleration or forced deceleration of the optical disk for an arbitrary period of time when the temperature thereof is equal to or higher than an arbitrary set temperature. Therefore, a recording/reproduction driving system of the optical disk can perform a fast and stable operation within an allowable range of losses of the spindle driver IC due to heat.

According to the invention (Claim 4), in the optical disk device as defined in any of Claims 1 to 3, the traverse driver IC internally has the monitor circuit and the comparison

circuit, and a control for suppressing heat generation of the traverse driver IC is exerted so that a free run state of the optical disk is included in changes in revolution of the optical disk.

According to the optical disk device constructed as described above, the monitor circuit and the comparison circuit are included in the traverse driver IC, and heat generation of the traverse driver IC is suppressed by including a free run state of the optical disk in changes in the revolution of the optical disk when the temperature thereof is equal to or higher than an arbitrary set temperature. Therefore, the recording/reproduction driving system of the optical disk can perform a fast and stable operation within an allowable range of losses of the traverse driver IC due to heat.

According to the invention (Claim 5), in the optical disk device as defined in any of Claims 1 to 4, the actuator driver IC internally has the monitor circuit and the comparison circuit, and a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

According to the so-constituted optical disk device, the monitor circuit and the comparison circuit are included in the actuator driver IC, and heat generation of the actuator driver IC is suppressed by reducing the number of revolutions of the optical disk when the temperature thereof is equal to or higher

than an arbitrary set temperature. Therefore, the recording/ reproduction driving system of the optical disk can perform a fast and stable operation within an allowable range of losses of the actuator driver IC due to heat.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1 is a block diagram illustrating an optical disk device according to a first embodiment of the present invention.

BEST MODE TO EXECUTE THE INVENTION

(Embodiment 1)

A structure of an optical disk device according to a first embodiment will be described with reference to figure 1.

Figure 1 is a block diagram illustrating an optical disk device according to the first embodiment. In the figure, the optical disk device in the first embodiment comprises a disk 1, a spindle motor 2 for rotating the disk 1, an object lens 3 for detecting data on the disk 1, a pickup 4 including an actuator for controlling and driving the object lens 3 with high accuracy so as to follow data when data on the disk 1 are detected, an Optical amp 5 as an optical amplifier, a traverse motor 6 for moving the pickup 4 in a radial direction of the disk 1, a spindle driver IC 7 as an IC for driving the spindle motor 2, a traverse driver IC 8 as an IC for driving the traverse motor 6, an actuator driver IC 9 as an IC for driving

the actuator of the pickup 4, a DSP (Digital Signal Processor) 10 for performing servo control such as binarization or error handling of data detected from the disk 1 as well as controlling the spindle driver IC 7, the traverse driver IC 8 and the actuator driver IC 9, monitor circuits 12a, 12b and 12c for monitoring junction temperatures of the respective driver IC chips, comparison circuits 13a, 13b and 13c for comparing the junction temperatures of the respective chips monitored by the monitor circuits 12a, 12b and 12c with respective arbitrarily set temperatures to output temperature flags as comparison results, and a CPU 11 which exerts a control of the whole device as well as monitors the temperature flags of the respective chips outputted from the comparison circuits to exert a control so as to suppress heat generation.

Next, the operation will be described. In figure 1, the junction temperatures of the respective chips of the spindle driver IC 7, the traverse driver IC 8 and the actuator driver IC 9 are monitored in the monitor circuits 12a, 12b and 12c in the driver ICs 7, 8 and 9, respectively, the monitored temperatures are compared with respective arbitrarily set temperatures in the comparison circuits 13a, 13b and 13c provided in the driver ICs 7, 8 and 9, respectively, and the comparison results are outputted to the CPU 11 as the temperature flags. Here, the above-described arbitrary temperatures are set in consideration of an allowable range of

losses of the respective driver ICs 7, 8 and 9 due to heat. Further, when the respective driver ICs 7, 8 and 9 are provided with the thermal shutdown function, the arbitrary temperatures can be set on the basis of the conditions such as the set operating temperatures of the respective driver ICs.

The CPU 11 obtains the febrile states of the respective driver ICs by monitoring the temperature flags outputted from the comparison circuits 13a, 13b and 13c. On the basis of the temperature flags, when the driver ICs have higher temperatures than the respective arbitrarily set temperatures, a control signal is outputted to the DSP 10 so that the driver ICs 7, 8 and 9 do not generate heat any more, respectively. The DSP 10 which has received the control signal controls the revolution of the disk 1 together with the CPU 11, through the spindle driver IC 7, the traverse driver IC 8 or the actuator driver IC 9. For example, when the temperature of the spindle driver IC 7 becomes equal to or higher than the arbitrarily set temperature, the CPU 11 and the DSP 10 control the spindle driver IC 7 so that forced acceleration or forced deceleration of the disk 1 is not performed for an arbitrary period of time, whereby the motion of the spindle motor 2 is eased, and heat generation of the spindle driver IC 7 is suppressed. Further, when the temperature of the traverse driver IC 8 becomes equal to or higher than the arbitrarily set temperature, the actuator driver IC 9 is controlled to drive the actuator so that a laser

beam outputted from the pickup 4 is not focused onto the disk 1, thereby making the disk 1 free run. That is, such free run state is included in changes in the revolution of the disk 1 to ease a high-speed movement of traverse (thread), thereby suppressing heat generation of the traverse driver IC 8. Further, when the temperature of the actuator driver IC 9 becomes equal to or higher than the arbitrarily set temperature, the spindle driver IC 7 is controlled to reduce the number of revolutions of the disk 1, whereby the face wobbling or eccentricity of the disk 1 is calmed down and the motion of the actuator for driving and controlling the object lens 3 which faces the disk 1 is eased, thereby suppressing heat generation of the actuator drive IC.

As described above, in the first embodiment, the monitor circuits 12a, 12b and 12c and the comparison circuits 13a, 13b and 13c are included in the respective driver ICs 7, 8 and 9, the junction temperatures of the respective chips are compared with arbitrarily set temperatures, the temperature flags as the comparison results are outputted to the CPU 11 to monitor the febrile states of the respective driver ICs 7, 8 and 9. When the temperature of the spindle driver IC 7 becomes equal to or higher than an arbitrarily set temperature, the spindle driver IC 7 is controlled so as not to perform forced acceleration or forced deceleration of the disk 1 for an arbitrary period of time. When the temperature of the traverse driver IC 8 becomes

equal to or higher than an arbitrarily set temperature, the actuator driver IC 9 is controlled so that a free run state of the disk 1 is included in changes in the revolution of the disk 1. When the temperature of the actuator driver IC 9 becomes equal to or higher than an arbitrarily set temperature, the spindle driver IC 7 is controlled so as to reduce the number of revolutions of the disk 1. Therefore, the respective driver ICs 7, 8, and 9 can be controlled so that a recording/reproduction driving system of the optical disk device can perform a fast and stable operation within the allowable capacities of the respective driver ICs and the allowable losses of the respective driver ICs due to heat.

While in the first embodiment the description is given of the case where the optical disk device has the monitor circuit 12 and the comparison circuit 13 in each of the spindle driver IC 7, the traverse driver IC 8 and the actuator driver IC 9, the optical disk device may have the monitor circuit 12 and the comparison circuit 13 in at least one of the driver ICs 7, 8 and 9. Also in this case, almost the same effects as described above are achieved.

APPLICABILITY IN INDUSTRY

The optical disk device according to the present invention, can be used as an optical disk device which can suppress heat generation of the respective driver ICs and enables a

recording/reproduction driving system to perform a fast and stable operation within the allowable range of losses of the driver ICs due to heat, in a state where speeding-up of optical disk devices are further progressed.

CLAIMS

1. An optical disk device for recording/reproducing data on/from an optical disk, comprising:

a monitor circuit for monitoring a junction temperature of a chip of a driver IC for driving a recording/reproduction driving system, and a comparison circuit for comparing an output of the monitor circuit with an arbitrary set temperature and outputting a temperature flag as a comparison result, which circuits are included in the driver IC; and

a CPU for controlling the operation of the entire optical disk device as well as monitoring the temperature flag outputted from the comparison circuit, said CPU performing a control so as to continue driving of the optical disk device when the junction temperature is lower than the arbitrary set temperature, and performing a control so as to suppress heat generation of the driver IC when the junction temperature is equal to or higher than the arbitrary set temperature.

2. The optical disk device as defined in Claim 1 including:

a spindle driver IC, a traverse driver IC, and an actuator driver IC as the driver IC.

3. The optical disk device as defined in Claim 1 or 2,

wherein the spindle driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the spindle

driver IC is exerted so as not to perform a forced acceleration or forced deceleration of the optical disk for an arbitrary period of time.

4. The optical disk device as defined in any of Claims 1 to 3,

wherein the traverse driver IC internally has the monitor circuit and the comparison circuit, and

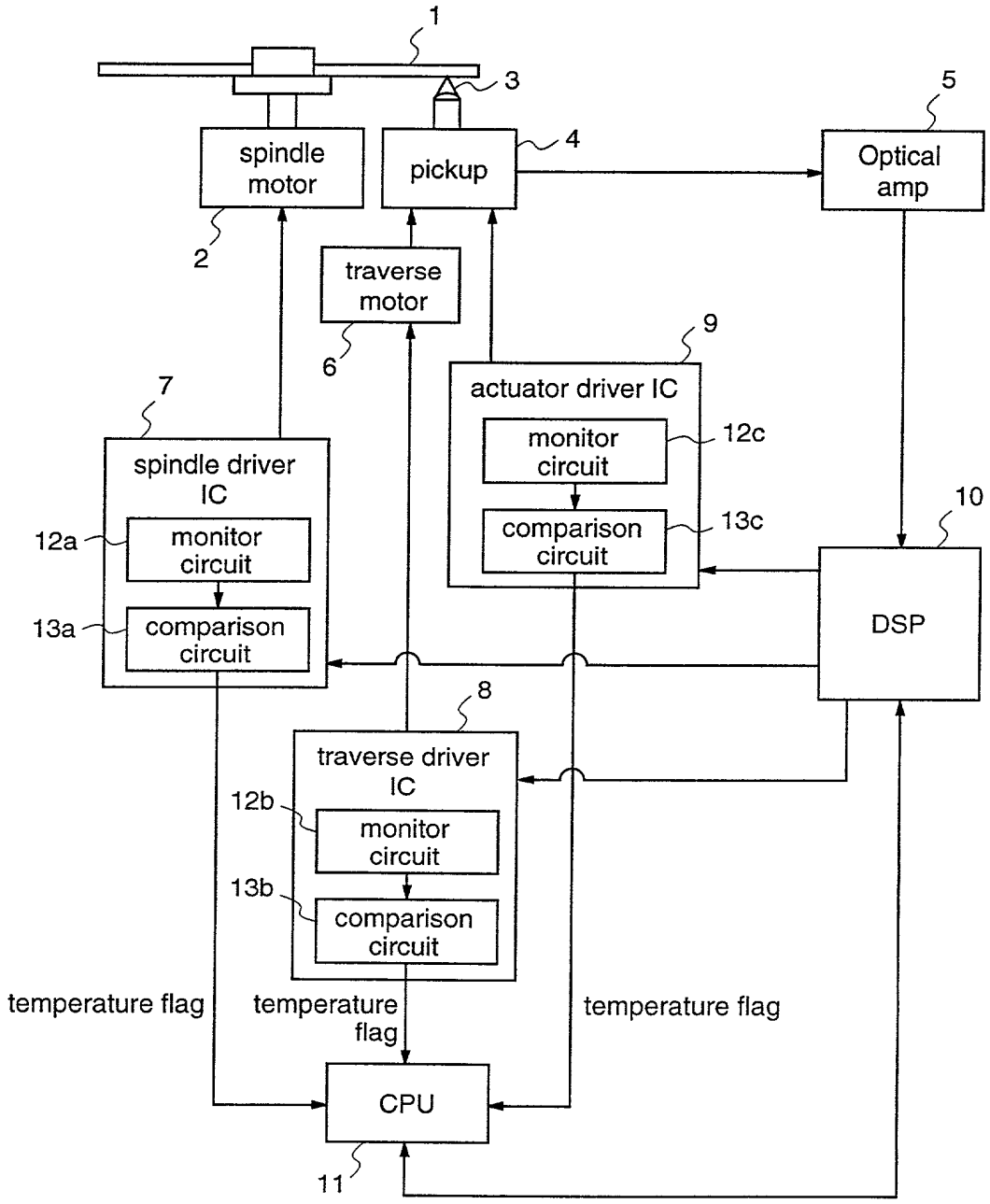
a control for suppressing heat generation of the traverse driver IC is exerted so that a free run state of the optical disk is included in changes in revolution of the optical disk.

5. The optical disk device as defined in any of Claims 1 to 4,

wherein the actuator driver IC internally has the monitor circuit and the comparison circuit, and

a control for suppressing heat generation of the actuator driver IC is exerted so as to reduce the number of revolutions of the optical disk.

Fig.1


1
3
5
spindle motor
pickup
4
Optical amp
2
traverse motor
6
9
actuator driver IC
monitor circuit
12c
comparison circuit
13c
7
spindle driver IC
12a
monitor circuit
13a
comparison circuit
10
DSP
8
traverse driver IC
12b
monitor circuit
13b
comparison circuit
temperature flag
temperature flag
temperature flag
CPU
11

Rev. 3-21-01

Effective March 1998

DECLARATION AND POWER OF ATTORNEY FOR U.S. PATENT APPLICATION

() Original () Supplemental () Substitute (X) PCT () DESIGN

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Title: OPTICAL DISK DEVICE

of which is described and claimed in:
() the attached specification, or
() the specification in application Serial No. _____, filed _____, and with amendments through _____, or
(X) the specification in International Application No. PCT/JP00/04275, filed June 29, 2000, and as amended on January 26, 2001 & August 30, 2001 (if applicable).

I hereby state that I have reviewed and understand the content of the above-identified specification, including the claims, as amended by any amendment(s) referred to above.

I acknowledge my duty to disclose to the Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim priority benefits under Title 35, United States Code, §119 (and §172 if this application is for a Design) of any application(s) for patent or inventor's certificate listed below and have also identified below any application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NO.	DATE OF FILING	PRIORITY CLAIMED
Japan	11-183738	June 29, 1999	YES

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION SERIAL NO.	U.S. FILING DATE	STATUS: PATENTED, PENDING, ABANDONED

And I hereby appoint Michael R. Davis, Reg. No. 25,134; Matthew M. Jacob, Reg. No. 25,154; Warren M. Cheek, Jr., Reg. No. 33,367; Nils Pedersen, Reg. No. 33,145; Charles R. Watts, Reg. No. 33,142; and Michael S. Huppert, Reg. No. 40,268, who together constitute the firm of WENDEROTH, LIND & PONACK, L.L.P., as well as any other attorneys and agents associated with Customer No. 000513, to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith.

I hereby authorize the U.S. attorneys and agents named herein to accept and follow instructions from HAYASE & CO. as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and myself. In the event of a change in the persons from whom instructions may be taken, the U.S. attorneys named herein will be so notified by me.

Direct Correspondence to Customer No:	Direct Telephone Calls to:
000513 PATENT TRADEMARK OFFICE	WENDEROTH, LIND & PONACK, L L P 2033 "K" Street, N.W., Suite 800 Washington, D.C. 20006-1021 Phone (202) 721-8200 Fax (202) 721-8250

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Full Name of Second Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE
Full Name of Third Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE
Full Name of Fourth Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE
Full Name of Fifth Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE
Full Name of Sixth Inventor	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME
Residence & Citizenship	CITY	STATE OR COUNTRY	COUNTRY OF CITIZENSHIP
Post Office Address	ADDRESS	CITY	STATE OR COUNTRY ZIP CODE

I further declare that all statements made herein of my own knowledge are true, and that all statements on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

1st Inventor *Yuji Matsuda* Date *October 9, 2001*
Yuji MATSUDA

2nd Inventor ____________________ Date ____________

3rd Inventor ____________________ Date ____________

4th Inventor ____________________ Date ____________

5th Inventor ____________________ Date ____________

6th Inventor ____________________ Date ____________

The above application may be more particularly identified as follows:

U.S. Application Serial No. NEW Filing Date August 30, 2001

Applicant Reference Number P-22952-02 Atty Docket No. 2001-1137A

Title of Invention OPTICAL DISK DEVICE